2007 ONR Capacitor Program Review Agenda

Tuesday, February 27, 2007

7:30-8:00 ***Continental Breakfast and Registration***

Introduction/Overviews

8:00-8:15 **Michele Anderson and Paul Armistead, ONR**
Welcome & Administrative Items

8:15-8:45 **Jack Bernardes, NSWC, Dahlgren Division**
Navy Pulse Power Needs

8:45-9:15 **Richard Jow, Army Research Laboratory**
Army Capacitor Needs

9:15-9:45 **TBD**
Navy Backup Power Needs

9:45-10:15 **TBD**
Air Force Capacitor Needs

10:15-10:45 ***Break***

Theory

10:45-11:15 **Jeffrey Calame, Naval Research Laboratory**
Microscopic, Macroscopic, and Multi-Scale Modeling of Capacitor Dielectrics and Composites

11:15-11:45 **Jerzy Bernholc, North Carolina State**
Microscopic, Macroscopic, and Multi-Scale Modeling of Capacitor Dielectrics and Composites

11:45-12:45 ***Lunch***

Power Conditioning 6.1

12:45-1:15 **Ming-Jen Pan, Naval Research Laboratory**
Glass-Ceramics for High Energy Density Capacitors/Novel Ceramics Processing

1:15-1:45 **Nathan Newman, Arizona State University**
Investigation of the Influence of Point Defects and Microstructure on the High Field Properties of Practical Ferroelectic Materials

Power Conditioning 6.2

1:45-2:15 **Wesley Hackenberger, TRS Ceramics, Inc**
Glass-Ceramic Capacitors for High Energy Density Power Conditioning Applications
Zlatko Sitar, North Carolina State/Iowa

2:15-2:45 *Nano-Scale Dielectrics for High Energy Density Power Conditioning*

2:45-3:15 ***Break***

Corporate Programs

3:15-3:45 **Steve Ducharme, University of Nebraska (DEPSCoR)**
Nanostructure-Designed Dielectric Materials for High-Energy-Density Capacitors

3:45-4:15 **Kirk Slenes, TPL, Inc. (SBIR)**
High Power Density Capacitors for Navy Pulse Power Applications

4:15-4:35 **David Cann, Oregon State University (DURIP)**
Acquisition of a High Temperature X-Ray Diffraction System for Materials Research

Wednesday, February 28, 2007

7:30-8:00 ***Continental Breakfast and Registration***

Supercapacitors 6.1

8:00-8:30 **Jeffrey Long, Naval Research Laboratory**
Multifunctional Carbon-based Hybrid Nanoarchitectures for High Performance Electrochemical Capacitors

8:30-9:00 **Seshu Desu, University of Massachusetts, Amherst**
Novel Conducting Polymer Composite & Hybrid Electrodes based Supercapacitor Electrical Power Sources Development through

Supercapacitors 6.2

9:00-9:30 **Patricia Smith, NSWCCD/Glenn Amatucci, Rutgers University**
Development of a Nonaqueous Asymmetric Hybrid Electrochemical Capacitor

9:30-10:00 **John Miller, JME, Inc**
High Energy Density Asymmetric Capacitor Development: Creation of 100,000F, 50 J/cc Power Conditioning Capacitors

10:00-10:30 ***Break***

10:30-11:00 **Jennifer Irvin, NAWC China Lake**
Polymer-Based Supercapacitors using Ionic Liquid Electrolytes

11:00-11:30 **Fred Wudl, University of California, Los Angeles**
Supercapacitors Based on Very High Surface Area Carbon and Self-mending Organic Composites of Ceramic Dielectrics

11:30-12:00 **John Reynolds, University of Florida**
Electron Rich and Dual Dopable Polymers for Charge Storage Applications

12:00-1:00 ***Lunch***

Characterization of ONR Capacitor Program Dielectric Materials

1:00-1:20 **Ming-Jen Pan, NRL**
NRL Characterization Capabilities and Results

1:20-1:40 **Charles Edmondson/John Fontanella/John Bendler, US Naval Academy**
USNA Characterization Capabilities and Results

1:40-2:00 **Charles Edmondson/John Fontanella/John Bendler, US Naval Academy**
New Polymer Dielectrics: Dielectric Materials Theory and Characterization

2:00 - 2:20 **Steve Boggs, University of Connecticut**
UCONN Characterization Capabilities and Recent Results

2:20-2:50 **Steve Greenbaum, Hunter College**
Solid State NMR Studies of Materials for Electrochemical Energy Storage

2:50-3:15 ***Break***

Unconventional Approaches

3:15-3:45 **Fisch/Petschek, Kent State University**
High Dielectric Constant Complex Fluids for High Energy Density Capacitors

3:45-4:15 **Richard Riman, Rutgers University**
Fluidic Dielectric Capacitors

4:15-4:45 **Theodore Goodson, University of Michigan**
Investigations of the Dielectric Constant of Encapsulated Dendritic Polyradicals

4:45-5:15 **Michael Therien, University of Pennsylvania**
Polarizable and Hyperpolarizable Chromopyhores for Pulsed-Power Capacitors

Thursday, March 1, 2007

7:30-8:00 ***Continental Breakfast and Registration***

Pulse Power MURI 6.1

8:00-8:30 **Michael Lanagan/MURI, Penn State University**
Overview of Pulsed Power Dielectrics MURI

8:30-9:00 **Tobin Marks/MURI, Northwestern University**
Unconventional Approaches to Ultra-High Energy Density Pulse Power Materials

9:00-9:30 **Eugene Furman/MURI, Penn State University**
Theoretical Studies of Dielectric Breakdown

9:30-10:00 **Qiming Zhang and Qing Wang/MURI, Penn State University**
Ferroelectric Polymer based Nanocomposites: Fabrication, Synthesis, and Properties

10:00-10:30 ***Break***

Pulse Power 6.1

10:30-11:00 **Neal Armstrong, University of Arizona**
Interface Characterization in Nanoparticle/Organic Composite Materials: Optimization of New High Permittivity Composite Materials

11:00-11:30 **Seth Marder, Georgia Tech University**
High Performance Nanostructured Polymer Composites for Capacitor Applications

11:30-12:30 ***Lunch***

Pulse Power 6.2

12:30-1:00 **T.C. Chung, Penn State University**
Investigation of New Isotactic Polypropylene and Syndiotactic Polystyrene

1:00-1:30 **Qiming Zhang, Penn State University**
Development of Novel PVDF Based High Dielectric Constant Polymer Thin Film Capacitors for Navy Pulse Power Applications

1:30-2:00 **Lei Zhu/Steve Boggs, University of Connecticut**
Molecular and Nano Composite Dielectrics for High Energy Density Capacitors

2:00-2:15 **Thomas Ramotowski, Naval Underwater Warfare Center**
Capacitor Film based on Interfacial Polarization

2:15-2:45 **Jim Shirk, NRL/Eric Baer, Case Western Reserve University**
Composite Polymer Capacitor Materials

2:45-3:00 **Michele Anderson and Paul Armistead Closing Remarks**